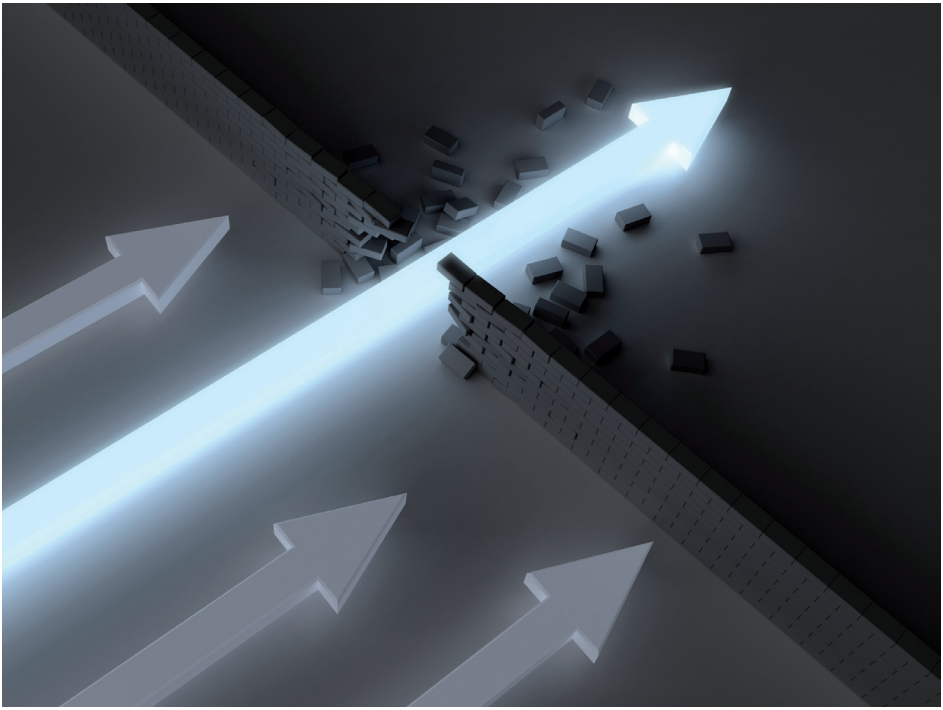


# Programming Device Test 2012

# The right Programming Device for every Application

Programming devices are used in a broad range of applications, such as electronics design, the production of electronic components, machine control system maintenance, and the modification and customization of electronic equipment. Specific functions may be of particular importance according to the area of application, so there isn't a single "best device" for all applications. With this test, we want to provide you with an objective decision making tool so that you can find the optimal solution for your needs.

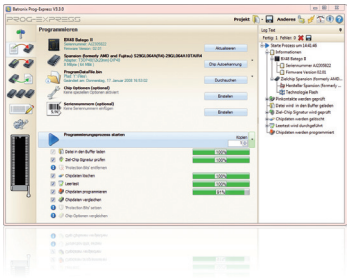
All tested programming devices were available to us for the benchmark test. The devices were tested thoroughly and examined in detail, with all data obtained in the same manner and without bias. The data specified on the respective manufacturer websites are often hard to compare with one another if you don't want to compare apples with oranges. Some manufacturers also tend to emphasis the benefits of their own devices and fail to mention missing functions.

Since we are also a programming device manufacturer in addition to being a distributor, it is of course tempting to give preferential treatment to our devices. But we tried to take an objective approach as far as possible, and are happy to accept any corresponding information if we failed to do so in any specific area. As a manufacturer, we have comprehensive know-how in this area, which enables the high quality and validity of the test results.

The programming devices were listed alphabetically by manufacturer name. Therefore there is no valuation attached to the order.

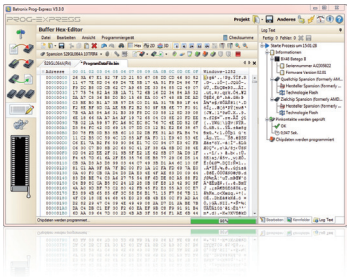
# Batronix BX48 Batego II

Link to page with details



The BX48 Batego II is the latest programming device by Batronix. The newly developed hardware in the compact and very durable aluminium housing offers a whole range of convincing arguments.

During testing, the device achieved the best reading and programming speeds in all categories. In comparison to the next-fastest device, the BX48 achieves 2 to 3 times higher read speeds, and is even 8 to 50 times faster than the similarly compact Galep-5 (depending on the chip technology).



The BX48 hardware is the only device in the test to support the next generation of chips with extremely low supply voltages according to the JEDEC standard JESD8-14A.01. Chips using this standard require a supply voltage of 1.0 volt with a maximum tolerance of 100 mV.

The BX48 Batego also convinces with its very small size, anodized aluminium housing, and the fact that it runs solely of the USB port with no external power supply. These advantages are particularly beneficial in the service field.

The control software Prog-Express combines a comprehensive set of ease-of-use functions such as automatic chip detection with an extremely easy to use interface. In addition, Prog-Express is also the only programming device software which runs natively on a range of Windows operating systems (from Windows 98SE to Windows 8 (32 + 64 Bit) and on Linux and Mac operating systems.

Unfortunately the chip support for some special microcontroller families is not yet very comprehensive. This will be improved with future software updates.

## PRO

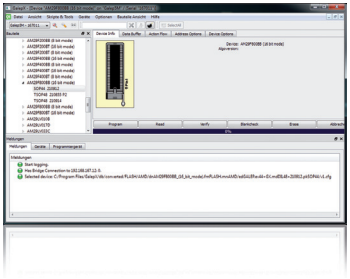
- Fastest programming device in the test
- Supports chips down to 0.9V
- USB powered – no mains connection required for operation
- Very compact design
- Robust housing
- Best control software
- Windows, Linux, and Mac OS support
- 5 year guarantee
- Made in Germany

## CONTRA

- Support for special microcontroller chips not as extensive as for the BeeProg+ and the Superpro 5000(E).

# Conitec Galep-5

Link to page with details




The Galep-5 is a compact programming device in an attractive housing. This programming device can be powered without a mains adapter via the USB port or six NiMH batteries.

The Galep-5 is the first to use embedded Linux which runs on the built-in ARM-9 processor. Unfortunately the Galep-5 needs approx. 2 minutes to start up on account of the operating system, while the other programming devices are ready to use in 2-3 seconds.

The software is simple and easy to use after a learning period. Unfortunately a few ease of use features which have long since been standard from other manufacturers are missing here. The use of filter text to restrict the chip search is missing, for example. Without this filter, one has to look through the complete list of supported chips to find the right chip identifier. The software runs on Windows and Linux operating systems.

Even though the manufacturer advertises the high speed of the Galep-5, we recorded much slower programming times, especially when it came to memory chips.

## PRO

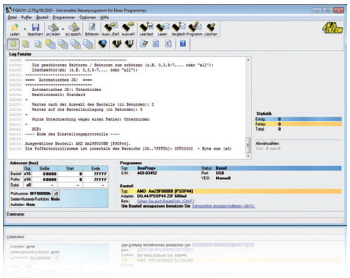
- No mains connection required (USB or battery powered)
- Very compact design
- Windows and Linux support
- Made in Germany

## CONTRA

- Device start-up time of approx. 2 minutes
- Long programming times
- No chip search in the software
- Practically no support for NAND memory chips

# Elnec Beeprog+ / Beeprog 2

Link to page with details



The BeeProg+ programming devices are fast programming devices with comprehensive chip support.

The Elnec BeeProg+ also has a faster twin, the BeeProg 2. This devices uses a new FPGA, which according to the manufacturer makes the BeeProg 2 between 20 and 70% faster than the BeeProg + when it comes to programming larger Flash chips and serial EEproms.

The control software features many options, but unfortunately is not laid out very clearly. The software language can also be set to German (among others), but the translation is still a bit choppy. The English language setting should be used if possible in order to avoid misunderstandings.

The BeeProg+ and BeeProg 2 programming devices also offer on old style parallel port interface in addition to the USB port. This allows for the use of very old computers (Windows 95 and up) to control the devices.


## PRO

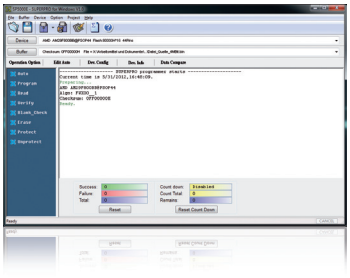
- Fast programming speeds
- Robust housing
- Comprehensive chip support

## CONTRA

- Software unfortunately poorly laid out
- Non-english language user interface can be misunderstood

# Xeltek Superpro 5000 / 5000e

Link to page with details




The Superpro 5000 and 5000E programming devices feature 144 pin drivers, which is considerably more than most other programming devices which normally feature 48 pin drivers.

The advantage becomes apparent during programming of various components in housings with high pin numbers. While other programming devices need different or convertible adapters for various chip types (e.g. in TSOP56 packages), this programming device only needs one TSOP56 adapter.

Another special feature of this programming device is a stand-alone mode for production purposes. The programming parameters and the file to be burned are combined into a project on the PC and transferred to a CF memory card. With this memory card, the Superpro 5000/5000E can run the project as many times as you want without a PC connection.

The two models Superpro 5000 and 5000E are differentiated by the supported components. The 5000E doesn't support any NAND chips, but the two devices have the same hardware. The control software is simple to use but doesn't offer as many options as the other manufacturers.

## PRO

- Fast programming speeds
- Comprehensive chip support
- 144 pin drivers
- Stand-alone operation

## CONTRA

- Software is unfortunately not very easy to use

# Component Support

The BeeProg and SuperPro 5000 programming devices lead the field in terms of component support. They are also able to program less common chips. All manufacturers normally offer generally free updates for additional chips. Sample chips must normally be provided for testing purposes, and a bit of patience is required.

| Feature | BX48 BATEGO II | GALEP-5 | BEEPROG+ | BEEPROG 2 | SUPERPRO 5000(E) |
|---|---|---|---|---|---|
| Very old NMOS EPROMs (VPP > 15V) | ✓ | ✓ | ✓ | ✓ | ✓ |
| NMOS EPROM (VPP <= 15V) | ✓ | ✓ | ✓ | ✓ | ✓ |
| EPROMs, EEPROMs, LPC, Flash... | ✓ | ✓ | ✓ | ✓ | ✓ |
| Serial EEPROMs | ✓ | ✓ | ✓ | ✓ | ✓ |
| Microcontrollers | ✓ *1 | ✓ | ✓ | ✓ | ✓ |
| Logic Modules GAL, etc. | ✓ *1 | ✓ | ✓ | ✓ | ✓ |
| NOR Flash | ✓ | ✓ | ✓ | ✓ | ✓ |
| NAND Flash | ✓ | | ✓ | ✓ | ✓ *2 |
| Ultra Low Voltage Chips (1,0V) | ✓ | | | | |

*1: The BX48 Batego devices support various microcontrollers and a few standard GAL logic modules. Additional components can generally be added upon request through software updates. The update is free, but can take a while depending on the workload. Before purchasing a programming device, review the list of already supported components. Please contact us if you need immediate support for a specific component.

*2: The SuperPro 5000E doesn't support any NAND Flash modules. This is a deliberate decision by the manufacturer in order to differentiate the two models (5000/5000E). Therefore no "upgrading" via software updates is offered for the SuperPro 5000E either.

# Speed

In order to allow for an objective comparison of all programming devices, they were all tested under identical conditions. All devices were connected to the same PC, and the latest version of the control software was used in all cases. Previously prepared files with random values covering the full size of the chips were used as test files. The programming devices programmed and compared the same chips with the same files.

Programming time including subsequent comparison in seconds for one chip:

| Category / Chip | BX48 BATEGO | GALEP-5 | BEEPROG+ | BEEPROG 2 | SUPERPRO 5000(E) |
|---|---|---|---|---|---|
| FLASH 8Mb AM29F800BB | 6.6 s | 24.0 s | 12.1 s | - | 7.1 s |
| FLASH 128Mb M29W128FH | 27.5 s | 441.8 s | 84.2 s | 38.2 s | 29.1 s |
| SPI 32Mb MX25L3205D | 17.9 s | 317.0 s | 27.3 s | 28.0 s | 38.5 s |
| I²C 512kb 24LC512 | 5.8 s | 155.2 s | 8.5 s | 8.4 s | 10.7 s |
| MC 256kb AT89C51RC | 1.6 s | 6.5 s | 12.6 s | 12.2 s | 7.7 s |

During programming, the chip itself needs some time to write a word. Therefore very fast programming devices only need a bit of the total time for data processing, and spend most of their time waiting for the chip. Therefore the read speed is more meaningful when it comes to measuring and comparing the true speed of the programming devices. This speed will then come to bear in future chip families which support higher programming speeds.

| Category / Chip | BX48 BATEGO | GALEP-5 | BEEPROG+ | BEEPROG 2 | SUPERPRO 5000(E) |
|---|---|---|---|---|---|
| FLASH 128Mb M29W128FH | 2.9 s<br>44.1 Mb/s | 59.8 s<br>2.1 Mb/s | 18.8 s<br>6.8 Mb/s | 14.9 s<br>8.6 Mb/s | 7.0 s<br>18.3 Mb/s |
| SPI 32Mb MX25L3205D | 3.0 s<br>10.7 Mb/s | 155.0 s<br>0.2 Mb/s | 7.9 s<br>4.1 Mb/s | 8.4 s<br>3.8 Mb/s | 7.2 s<br>4.4 Mb/s |
| I²C 512kb 24LC512 | 2.0 s<br>256 kb/s | 71,9 s<br>7 kb/s | 3.6 s<br>142 kb/s | 3.6 s<br>142 kb/s | 7.2 s<br>71 kb/s |
| MC 256kb AT89C51RC | 0.28 s<br>914 kb/s | 2,5 s<br>102 kb/s | 1.5 s<br>171 kb/s | 1.4 s<br>183 kb/s | 0.67 s<br>382 kb/s |

# Special Features and Functions

All devices feature functions such as splitting the files onto several chips and the use of offsets and serial numbers. The differences primarily become apparent when it comes to ease-of-use functions.

**Operation without a Power Supply:** The programming device can be used without a power supply, all programming voltages are generated internally from the USB voltage with charge pumps.

**Ultra Low Voltage Support:** Support for chips with supply voltages down to 0.9 volts, and therefore for the coming 1.0 volt chip technologies according to the JEDEC standard JESD8-14A.01.

**Automatic Chip Detection:** The programming device can detect chips automatically based on the chip signature. Selecting the chip identifier from the list of supported chips and setting it manually is no longer required. Note that not all chips feature a signature, so that it is not possible to detect all chips automatically.

**Multi Programmer Control (Gang Mode):** Several programming devices can be controlled simultaneously by one PC for series production. Several chips can be programmed simultaneously in this manner.

**Automatic Programming Start:** In production mode, the programming device detects when a new chip is inserted and can start the programming process automatically. Therefore the user can focus on changing chips during the production process and doesn't have to make entries anymore.

**Remote Control Software:** The control software can be controlled remotely by third-party applications for automation purposes.

**Stand-alone Operation:** The programming device can be used without being connected to a PC. It is controlled via a keypad and display on the programming device.

| Feature | BX48 BATEGO | GALEP-5 | BEEPROG+ | BEEPROG 2 | SUPERPRO 5000(E) |
|---|---|---|---|---|---|
| Operation without a power supply | ✓ | ✓ | | | |
| Ultra Low Voltage Support | ✓ | | | | |
| Automatic Chip Detection | ✓ | | (✓)*1 | (✓)*1 | |
| Multi Programmer Control | ✓ | | ✓ | ✓ | |
| Automatic Programming Start | ✓ | | ✓ | ✓ | ✓ |
| Remote Control Software | ✓ | ✓ | ✓ | ✓ | |
| Stand-alone Operation | | | | | ✓ |

*1: Automatic chip detection on the BeeProg programming devices only worked to a very limited degree, and unfortunately was not very convincing.

## Additional Device Features and Details

| Category | BX48 BATEGO II | GALEP-5 | BEEPROG+ | BEEPROG 2 | SUPERPRO 5000(E) |
|---|---|---|---|---|---|
| Manufacturer | Batronix | Conitec | Elnec | Elnec | Xeltek |
| Interface | USB 2.0 HS | USB 2.0 HS | USB 2.0 HS, Parallel port | USB 2.0 HS, Parallel port | USB 2.0 HS |
| Pin Drivers | 48 | 48 | 48 | 48 | 144 |
| Low Voltage Support from | 0.9 V | 1.3 V | 1.8 V | 1,8 V | 1.2 V |
| Device Dimensions [cm] | 13.7 x 8.5 x 2.5 | 8 x 11.5 x 3.3 | 14 x 19.2 x 5.6 | 14 x 19.2 x 5.6 | 14.8x21.6x11.5 |
| Device Weight | 257 g | 186 g | 1100 g | 1100 g | 1574 g |
| Operating Systems | Windows, Linux & MAC | Windows & Linux | Windows | Windows | Windows |
| Made in... | Germany | Germany | Slovak Republic | Slovak Republic | China |
| Warranty Period | 5 years | 2 years | 3 years | 3 years | 2 years |
| Price net [€] (As of 25.06.2012) | 417.65 | 417.65 | 815.13 | 998.32 | 5000E:1007.56 5000:1343.70 |

## Conclusion

After this extensive programming device test, we can make a variety of recommendations:

For service applications and the field of motor control devices, we can clearly recommend the Batronix BX48 Batego II and the Conitec Galep-5 on account of the compact size and the ability to operate the devices without a power supply. The BX48 also offers very convenient and easy operation with functions such as automatic chip detection.

For laboratories and development where support for many different chips in larger packages with more than 56 pins is important, we can recommend the Xeltek SuperPro 5000(E) in particular. If this is not the case, then the BX48 Batego II and BeeProg programming devices are also highly recommended.

The BX48 Batego II is highly recommended for production purposes. Due to the very high speed, the ability to control up to eight programming device with one PC for series production, and automatic programming start, this device is particularly well suited to mass production applications. Gang programming devices in four or eight socket versions in the form of the BX448 and BX848 are available with BX48 technology in one compact device.